2nd agricultural & residential working group meeting

Chestnut Creek Public Meeting on November 18, 2014 6:30-8:30pm attendance: 14

Attendees: Chris Burcher, DEQ; Nathan Grinstead, DEQ; Karen Kline, BSE; Maxine Boggs, Master Gardeners of the Blue Ridge; James Moneymaker, DEQ; Fred Romine, resident; Philip Hash, City of Galax; Edwin Ward, City of Galax; Don Garman, DOF; Stacy Horton, DCR; Tracy Goodson, NRSWCD; Reece Phipps, NRSWCD; Steve Ogle, NRSWCD; Pete Farmer, NRSWCD.

1. Introductions of all in attendance
2. Chris Burcher, from the Virginia Department of Environmental Quality (DEQ), presented an overview of the TMDL process and the Chestnut Creek TMDL
3. Karen Kline, from Virginia Tech, led the group through a handout (attached at end).
4. Questions and Comments that arose throughout the meeting (DEQ and Virginia Tech responses *italicized*):
    a. There appear to be a high number of straight pipes? *The number of straight pipes was estimated during TMDL development at 97. This estimate is based on the age of houses in the watershed and their proximity to the stream.*
    b. Do they consider failing septic systems the same as straight pipes? *Yes, the practices used to treat failing septic systems or the same as those for straight pipes.*
    c. Are you accounting for bacteria sources from the Chestnut headwaters until in runs into the New River? *Yes, but only considering what we can do in VA*
    d. *Are there opportunities to include more practices to reduce bacteria load in pasture?* It would be difficult to add more practices
    e. What is the timeline for the project? *Other projects have varied between 10 and 20 years*
    f. Over time fencing will get old and cattle will eventually get into streams; what happens to the water quality then? *Hopefully once the farmers see the benefits of keeping cattle out of the stream, they will want to continue. That has been the experience in other watersheds.*
    g. *An 87% reduction of bacteria from pastureland is needed to achieve "delisting", removing Chestnut Creek's impaired status.* Do you see 80 or 90% improvements in other projects? *Karen noted that reductions over 50% are hard to achieve and take longer; she recommended setting a first goal, Stage 1, lower than 50%; improvements may not be immediate, but over a couple of years you will start to see the improvements*
    h. When a farmer is on a budget, and the cost share money is not there anymore, will it really be feasible? If the farmer doesn't have the money, it doesn't seem like it would work; if you want it to be long term, but over 25 years, we need a program
    i. Livestock exclusion is from 2006, is there any credit given for BMP's implemented after 2006? *Yes*
    j. Is there a way to include numbers from EQIP? *Chris and Karen will look into this*
    k. *What types of BMPs would be most attractive to landowners for pasture management?* Livestock exclusion

l. There is a pet waste station on the New River Trail in Galax and the city parks have signage about picking up pet waste that has been installed since 2006
m. *Does anyone know any other BMP's that might have been installed after 2006? Is the city doing anything?* The city handles storm water according to requirements
n. *Improvements on sewer systems?* The city is constantly working on upgrades of the sewer systems; a lot of it is 60 years old and needs to be upgraded and they are working on that now
o. *Why is cropland decreasing?* Some of it is turning back into forest and some is being developed into residential areas
p. Some examples of educational practices to promote in the watershed: rain barrel workshop, composter workshop
q. 10 foot buffer for livestock exclusion fencing would be more probable because the fields are so much smaller
r. Is the 10 foot buffer at 100% cost share? *No, but the SL-6 practice with 35 foot buffer is currently 100% cost share*
s. *Do we need to add LE-1T in there?* Yes, it pays 85%
t. Is it possible to increase cost share on the 10 foot buffer? *Probably not but Chris can look into it*
u. Only reason they are not using SL-6 is because of the extremely large 35 foot buffer
v. SL-7T would fit under grazing land management
w. Estimated cost of Reforestation of erodible pasture should be $120
x. Maybe increase estimated cost of vegetative cover for cropland
y. A lot of opportunity for stream bank stabilization/restoration practices in the watershed.
z. Chris will look into funding for stream bank stabilization/restoration practices that are not ag related
aa. The way Chestnut Creek floods, wouldn't you need a strong stabilization system? *Yes but it can be done*
bb. What would the staff hired for technical assistance do? *Handle the program, educational awareness, etc.*
cc. The City of Galax is managing stormwater runoff within the City as required by Virginia's mandatory stormwater regulations.
dd. Will we target certain streams? *Need a survey, usually prioritize higher populated areas (get the low hanging fruit)*
ee. Cost of stabilization, versus rain gardens and education program, would be more beneficial especially with limited funds
ff. Could do a residential program to reduce runoff or rain gardens, at least get those ideas out there
gg. Rain gardens would generally be great idea but when you have huge rains where creeks turn into rivers, stream bank stabilization will be a permanent structure but not help the flooding aspect

hh. Find out how much we would need for residential stream bank practices? *Karen (and others) will look at a map of residential areas to identify potential sites for streambank stabilization and/or stream restoration.*
ii. Master Gardeners of the Blue Ridge would like to be included in the education plan
jj. *How many pump outs should we target?* If you did a 100 pump outs that would be pushing it
kk. 97 houses with straight pipes seem to be a high estimate
ll. You cannot move money around to different things once the IP is approved
mm. What happens if once the money is available you find out there are more straight pipes than you thought?
nn. Is any city property included in the study? *If it's a MS4 area then they are regulated, but the City of Galax is not, but the City has a storm water management program. Looking at the bacteria loads throughout the watershed, there is more bacteria coming from agricultural lands than developed.*
oo. Chris will talk to the health department about the distribution of repairs and replacements of failing septic systems.
pp. Is there a way to add money to grant for a hookup? *Yes, could add a couple to the plan*
qq. If a household is not connected to the City's sewer system, they could be identified since water and sewer costs are billed separately.
rr. Any other questions or comments?
    i. Explain the process? What happens next?
    ii. IP will be done early next year, everything talked about tonight translated into IP and approved by EPA, creek has IP and is eligible for funding this time next year, working out about 1.5 years from now
    iii. We get 40% of state allotted money for this area so our chances are greater and doing this IP greatly increases our chances of getting funding awarded
    iv. How much is the grant? *1.5 million for the whole state and we received 40% of that*

Next step for this is to have a draft plan in January, have one more meeting before the public meeting

TMDL Review:

- Chestnut Creek first listed as impaired in 1996 for violations of the General Standard (benthic)
- listed again in 2004 for violations of the fecal coliform and *E. coli* water quality standards
- TMDL study completed in 2006 with two TMDLs – sediment and *E. coli*
- addressing the General Standard
    - o results of a stressor analysis revealed that **sediment** is the most probable stressor of the aquatic life in Chestnut Creek
    - o sediment TMDL developed with alternate scenarios to achieve the sediment reductions

Scenarios	Disturbed Forest	Unimproved Pasture	Overgrazed Pasture	High Till Row Crop	Streambank Erosion	Straight Pipes
Scenario 1	34%	33%	34%	34%	34%	100%
Scenario 2	0	40%	42%	40%	0	100%
Scenario 3	39%	39%	38%	38%	0	100%

- addressing the bacteria standard
    - o ***E. coli*** TMDL developed with reductions to achieve delisting (Stage 1) and the TMDL goal (Stage 2)

Source Reductions	Livestock in Stream	Straight Pipes	Agricultural Land	Residential Land
Delisting Goal Stage 1	65%	100%	87%	87%
TMDL Goal Stage 2	65%	100%	98%	98%

<u>Proposed</u> Reductions for Delisting:

Sediment -

Scenario	Disturbed Forest	Pasture	Row Crop	Streambank Erosion	Straight Pipes
TMDL Goal (Stage 1)	0%	37%	28%	4%	100%

Bacteria –

Source Reductions	Livestock in stream	Straight Pipes	Pasture	Cropland	Residential Land
Stage 1	65%	100%	37%	20%	86%
Delisting Goal (Stage 2)	65%	100%	87%	20%	86%
TMDL Goal (Stage 3)	65%	100%	98%	20%	86%

Changes since TMDL development:

Best management practices (BMPs) installed in the Chestnut Creek watershed

BMP Name	BMP Code	Number	Extent Installed	
			Units	Amount
Afforestation of erodible crop and pastureland	FR-1	23	acres	322.8
CREP grazing land protection	CRSL-6	6	linear feet	17,422
CREP riparian forest buffer planting	CRFR-3	11	acres	34.9
Extension of CREP watering systems	SL-7	5	acres	55.55
Livestock exclusion with reduced setback	LE-2	1	linear feet	886
Permanent vegetative cover on critical areas	SL-11	1	acres	4.8
Permanent vegetative cover on cropland	SL-1	9	acres	71.6
Protective cover for specialty crops	SL-8	10	acres	136.41
Riparian buffer rent	CP-22	12	acres	38.4
Small grain cover crop for nutrient management	SL-8B	258	acres	1,810.2
Stream exclusion with grazing land management	SL-6	37	linear feet	34,695.3
Signage for pet waste in city parks – *when was it installed?*				

Population:

	Population		Housing	
	2000	**2010**	**2000**	**2010**
Carroll County	29,245	30,042	14,680	16,569
Grayson County	17,917	15,533	9,123	9,156
Galax	6,837	7,042	3,217	3,252
Total	**53,999**	**52,617**	**27,020**	**28,977**

Agricultural Statistics (National Agricultural Statistics Service, NASS):

	Farms		Acres		Cattle		Cropland (acres)	
	2002	**2012**	**2002**	**2012**	**2002**	**2012**	**2002**	**2012**
Carroll County	953	980	121,910	140,474	39,903	45,313	61,724	41,466
Grayson County	939	764	150,609	131,922	34,016	30,499	61,615	27,879
Total	**1,892**	**1,744**	**272,519**	**272,396**	**73,919**	**75,812**	**123,339**	**69,345**

Potential BMPs:

Bacteria and sediment reduction efficiencies and estimated costs for BMPs. Practice codes are listed in parentheses.

Control Measures	% Effectiveness		Source		Units	Cost / Unit	Extent installed since TMDL
	Bacteria	Sediment	Bacteria	Sediment			
Residential Wastewater Practices Needed to Meet TMDL Reductions							
Septic Tank Pump-out (RB-1)	95%	-- NA --	3	-- NA --	system	$300	
Connection to Public Sewer (RB-2)	80%	-- NA --	1	-- NA --	system	$5,000	
Septic Tank System Repair (RB-3)	80%	-- NA --	1	-- NA --	system	$3,500	
Septic Tank System Installation/Replacement (RB-4)	9%	-- NA --	1	-- NA --	system	$7,500	
Alternative On-site Waste Treatment System (RB-5)	70%	-- NA --	1	-- NA --	system	$15,000	
Pet Waste Removal Practices Needed to Meet TMDL Reductions							
Pet Waste Stations	100%	-- NA --	1	-- NA --	number	$1,300	
Pet Waste Composters	100%	-- NA --	1	-- NA --	number	$100	
Pet Waste Program	75%	-- NA --	6	-- NA --	number	$4,000	
Livestock Exclusion Practices Needed to Meet Direct Deposit TMDL Reductions							
CREP Grazing Land Protection (CRSL-6)	100%	-- NA --	1	-- NA --	system	$30,000	6
Livestock Exclusion with Riparian Buffers (SL-6, SL-6T)	100%	-- NA --	1	-- NA --	system	$25,000	37
Livestock Exclusion with Reduced Setback (LE-2, LE-2T)	100%	-- NA --	1	-- NA --	system	$20,000	1
Stream Protection System (WP-2)	100%	-- NA --	1	-- NA --	system	$10,000	
Pasture Practices Needed to Meet TMDL Reductions							
Animal Waste Control Facility (WP-4)	40%	40%	2	5	system	$150,000	
Grazing Land Management System	50%	30%	3	5	acres	$75	
Heavy Use Area Protection (NRCS 561)	40%	40%	2	5	system	$20,000	
Permanent Vegetative Cover on Critical Areas (SL-11)	Land Use Change	Land Use Change	4	4	acres	$2,000	4.8

Control Measures	% Effectiveness		Source		Units	Cost / Unit	Extent installed since TMDL
	Bacteria	Sediment	Bacteria	Sediment			
Reforestation of Erodible Pasture (FR-1)	Land Use Change	Land Use Change	4	4	acres	$1,200	322.8
Water Control Structures (WP-1)	88%	49%	10	10	acres treated	$140	
Cropland Practices Needed to Meet TMDL Reductions							
Continuous No-till (SL-15A)	70%	70%	2	5	acres	$20	
Permanent Vegetative Cover on Cropland (SL-1)	Land Use Change	Land Use Change	4	4	acres	$30	71.6
Protective Cover for Specialty Crops (SL-8)	70%	70%	2	5	acres	$25	136.41
Small Grain Cover Crop (SL-8B)	20%	20%	2	5	acres	$25	1810.2
Channel Erosion Reduction Practices Needed to Meet TMDL Reductions							
Streambank Stabilization	-- NA --	310 lbs/ft/yr	-- NA --	8	linear foot	$300	
Technical Assistance Needed to Meet TMDL Reductions							
Technical Assistance - Full Time Equivalents (FTEs)	Two FTEs for stage 1 (x years) and one FTE for stage 2 (x years)				years	$60,000	

1 - Removal efficiency is defined by the practice
2 - Bacteria efficiency assumed equal to sediment efficiency
3 - VADCR and VADEQ. 2003. Guidance Manual for Total Maximum Daily Load Implementation Plans
4 - Based on differential loading rates to different land uses
5 - Chesapeake Assessment Scenario Tool - BMP effectiveness values by land use and HGMR and pollutant
6 - Swann, C. 1999. A survey of residential nutrient behaviors in the Chesapeake Bay. Widener Burrows, Inc. Chesapeake Bay Research Consortium. Center for Watershed Protection. Ellicott City, MD. 112pp.
7 - Overlapping BMPs
8 - Chesapeake Bay Program. 2013. Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects
9 - Roanoke River TMDL IP. July 29, 2014.
10 - Center for Watershed Protection. 2007. National Pollutant Removal Performance Database, Version 3.

Residential needs assessment:

Additional examination of the model used to develop the bacteria TMDL indicated that an **86%** reduction of bacteria load on residential land would meet the delisting and TMDL goals. **85%** of the bacteria load on residential land use is estimated to be from failing septic systems. The additional **1%** could be addressed with a pet waste education program.

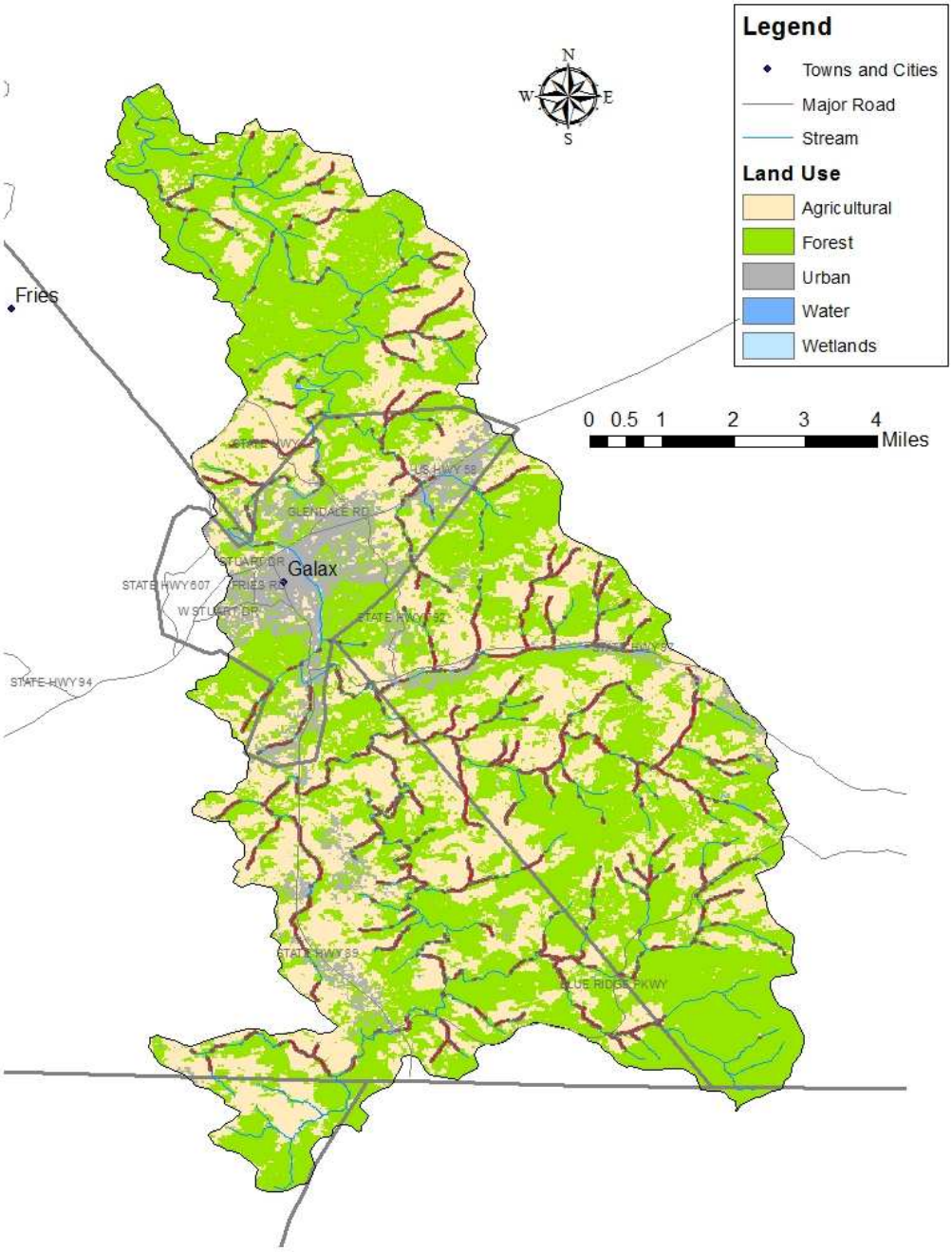
Potential failing septic systems and straight pipe BMPs in Chestnut Creek.

Houses with Standard Septic Systems	Houses with Failing Septic Systems	Houses with Straight Pipes	Estimated No. of Systems Needed				New Sewer Hookups
			Septic System Pumpouts	Septic System Repairs	Conventional Septic Systems	Alternative Septic Systems	
2,620	1,280	97					

Considerations –

- would a septic system pumpout program be beneficial?
- % of failing systems needing repair vs. replacement
- % of straight pipe and failing septic system replacements as conventional vs. alternative
- possibility of hooking up to sewer?
- possibility of installing pet waste stations on downtown trail, New River trail?

Fencing needs assessment:



Potential fencing areas in Chestnut Creek (highlighted in red).

	Linear Feet	Linear Miles
Total potential fencing	437,773	83
Perennial	182,216	35
Intermittent	255,557	48
Fencing installed to date	53,003	10
Remaining fencing needed (65% livestock exclusion)	231,549	44